

6 Documents Related to
Proposed Transuranic Test
Run

Lee:

There will be a meeting in J. G.
Crawford's office Monday, 1/31/77
at 10:00 a.m. to discuss the attached

Ruthie

APPROVED FOR RELEASE BY:

W. H. [unclear] 2-21-00

Orig: GDA (CAG)
Copy: RBB

UNITED STATES
ENERGY RESEARCH AND DEVELOPMENT ADMINISTRATION

OAK RIDGE OPERATIONS
P. O. BOX E
OAK RIDGE, TENNESSEE 37830

January 13, 1977

Goodyear Atomic Corporation
ATT:: Mr. D. Tabor
General Manager
P. O. Box 528
Piketon, Ohio 45667

Gentlemen:

MANAGEMENT OF RECYCLE MATERIALS AT PORTSMOUTH

Reference: Letter, Fletcher to Tabor, dated August 16, 1976,
subject "Processing of Low Enriched Uranyl Nitrate
Solutions."

For the past several weeks members of our respective staffs
have had numerous conversations concerning the management of
recycle materials at the Portsmouth site. In the referenced
letter I provided guidance as to those actions to be taken by
Goodyear relating to the supervision of recycle materials.

In light of recent conversations with your staff we have reviewed
our approach associated with the regulation of recycle materials
at Portsmouth and have reached the following conclusions which
should be implemented as soon as possible.

1. The URE solution received from Germany, stored in the
eleven stainless steel containers, should be processed
to U_3O_8 . It is hoped that this can be completed by the
end of FY 1977.
2. All recycle materials greater than 1.0% U-235 should be
retained at Portsmouth. Further guidance as to final
disposition of this material will be provided by this
office pending ORO review and evaluation of the GAT
study on processing uranium-contaminated with recycle
materials in X-705.

January 13, 1977

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3. **The impact on VFE and HE production as a result of excluding recycle materials on hand and scheduled to be received for processing to UF₆ in X-705 should be developed and provided to this office. If your review indicates any significant deviation from the current mode of operation we request that you notify this office immediately.**
4. **The moratorium on (a) conversion of alpha contaminated oxides to UF₆, and (b) cascade feeding of alpha contaminated UF₆ is to be continued.**
5. *Filter ash* **Goodyear should make a concerted effort to ship existing residues or the SR stream back to Savannah River if satisfactory arrangements can be worked out with Du Pont. In an attempt to expedite this return, we suggest that a member of your staff contact Mr. Jim Beatty of Du Pont, telephone FTS-239-4019, for further information on this subject.**

This guidance **supersedes previous direction** we provided you in the referenced letter. **As is the case before, it is possible that deviations from the above conditions may be desirable or necessary in the future. Such cases will be considered individually and must be approved by this office. If you have any problems with the actions to be taken by Goodyear, please contact Rick Co? lier of my staff.**

Sincerely,

[Signature]
R. Doran Fletcher, Director
Uranium Enrichment Operations Division

GUO:RNC

May 76 1500 Kg $2\frac{1}{2}$ ton

5,000 - 6,000 NLO oxide

~~1500 d/m~~
600 - 4400

3000 d/m

2000 kg oxide 2.50% Assay
2700 d/m / g U

no problem with high assay available for side feed

Recommendation

1. ≤ 3000 d/m / g U
2. additional air sampling
3. In VRU here Aug late to Oct (before after program)
Urine sample 24 hr/week (send to X-10?)
4. Cut down on convective flow
5. additional system sampling
6. Tower ash sampling before blow back
7. MgF_2 changes (no screening)
8. Isolate PG Filter ash, better handling
9. Solve all solutions!
10. All samples in glove box (MgF_2 + Na F)
11. Information

APPROVED FOR RELEASE BY:

W. H. F. T. P. H. D. E. - 2 - 21 - 60

- Transmittal Tap -

CALL LNR-WIL - No 3, No 4, No 8, No 9, No 10.

- 1800 Material Rounddown -

- Also German Material -

- Type op - Data - -

INTERDEPARTMENTAL CORRESPONDENCE

EPY
WJC
WJR
DDA/CMS

TO: Listed Distribution

DATE: August 16, 1977

DEPT:

FROM DEPT: 920

LOCATION:

CODE NO: GAT-920-77-86

REFERENCE:

SUBJECT: EXPERIMENTAL PROCESSING OF TRANSURANIC-CONTAMINATED URANIUM OXIDE

NOTE:
THIS STILL
has to have
ERDA
Approval
before
we do
the run
JL

At our meeting on August 15, we agreed to process a quantity of transuranic-contaminated uranium oxide in the X-705 Building on an experimental basis. We devised a plan that we propose to submit to ORO-ERDA for their approval.

For the experiment to yield the most useful information, it should be conducted as nearly as possible to a typical production run, permitting the recycle concentrations that normally occur in such a production run. Approximately 2,000 kgs of uranium oxide having transuranic-contamination levels of 2600 to 2700 d/m will be processed over a period somewhat less than a month (U-235 assay is between two and three percent). The following actions will be taken either as part of the experiment or in preparation for the experiment:

1. The environment both inside and outside the building will be monitored thoroughly to determine whether the quantities and concentrations of transuranics released to the environment are acceptable.
2. Employee monitoring will be expanded to assess the buildup of transuranics in the employees' bodies. During the period of the experiment, employees in the area will submit 24-hour urine samples weekly. In addition, they will be scheduled for in-vivo counting both before and after the experiment.

WJR

3. The equipment and systems in the oxide conversion facility will be improved by performing maintenance activities that had been postponed.

WJR

4. Efforts will be made to provide ventilation isolation in the various rooms in order to minimize convective transfer of airborne contamination.

NLO -
SR Bunched
NLO output -

Material - Refine

Keys -
Purity -
Source -

DET

Storage of waste

Training - Ramphouring

5. The experiment will be conducted and samples will be taken in order to provide a good transuranic mass balance. For example, new magnesium fluoride and sodium fluoride traps will be used, clean PG filters will be used, and samples will be collected from streams between the major facility components.
6. Unfluorinated oxide normally is "blown back" to the feed periodically. Samples will be collected each time this recycle operation is conducted. Special precautions will be taken during handling of the PG filter ash in order to provide the maximum isolation from the general environment.
7. With the exception of samples taken from the magnesium fluoride and sodium fluoride traps, all sampling of solids will be performed in a glove box.
8. All entrances to the oxide conversion area--and all doors between rooms in the area--will be posted to warn personnel of high airborne radioactivity concentrations.
9. Pre-job employee training will be provided to inform employees of the special problems encountered in working with transuranics and of the special need for carefully following established procedures in this experiment.
10. Access to the area will be carefully controlled for the duration of the experiment.

Original Signed By
V. S. EMLER

V. S. Emler, Superintendent
General Safety & Environment Mgt.

VSE:lnr

Listed Distribution

✓ G. D. Althouse
✓ J. G. Crawford
V. J. DeVito
C. A. Mentges
W. R. Schultz
F. S. Voss

INTERDEPARTMENTAL CORRESPONDENCE

TO: C. P. Blackledge, Supervisor

DATE: August 29, 1977

DEPT: Industrial Hygiene

FROM DEPT: D-552

LOCATION: X-101 Building

CODE NO: GAT-552-77-141

REFERENCE:

SUBJECT: **TRANSURANIC ELEMENT ALPHA ACTIVITY IN UF₆**
PRODUCED AT X-705

<u>Sample Transfer</u>	<u>Cylinder No.</u>	<u>Production Dates</u>		<u>Transuranics</u>			
		<u>From</u>	<u>To</u>	<u>Alpha d/m/gU</u>	<u>²³⁷Np D/m/gU</u>	<u>²³⁹⁻²⁴⁰Pu D/m/gU</u>	<u>²³⁸Pu D/m/gU</u>
3558	ST-0333	4-26-77	4-29-77	105	78	18	9
3559	ST-0031	2-22-77	4-26-77	3,585	2,324	818	443
3560	ST-0400	4-26-77	5-5-77	319	170	91	58
3561	ST-0325	5-6-77	5-10-77	96	54	26	16
3563	ST-0526	5-5-77	5-9-77	484	242	142	100
3564	ST-0242	5-20-77	5-23-77	67	20	29	18
3565	ST-0085	5-20-77	5-20-77	26	4	12	10
3566	ST-0552	5-18-77	5-19-77	88	49	28	11
3567	ST-0408	5-13-77	5-17-77	50	15	22	13
3568	ST-0414	5-20-77	5-20-77	35	13	14	8
3569	ST-0437	5-10-77	5-13-77	8	2	4	2
3570	ST-0413	5-20-77	5-23-77	9	2	4	3
3562	ST-0491	4-26-77	4-26-77	108	35	49	24
3571	ST-0282	5-13-77	5-18-77	18	6	8	4
3575	ST-0492	5-23-77	5-23-77	31	14	11	6
3803	ST-0567	5-20-77	5-23-77	704	595	73	36
3813	12-0101	5-13-77	5-17-77	625	293	147	185
3814	12-0152	2-22-77	4-26-77	6,250	4,430	975	843
3815	12-0093	4-26-77	4-26-77	527	140	200	186
3816	12-0099	5-11-77	5-11-77	1,970	130	840	1,000
3817	12-0185	5-11-77	5-13-77	625	123	240	262
3820	12-0118	5-17-77	5-18-77	36	8	14	13
3805	ST-0403	5-26-76	5-26-76	344	42	200	102
3807	12-0055	5-6-77	5-9-77	47	<1	21	26
3808	12-0040	5-5-77	5-6-77	3,166	50	1,322	1,794
3809	12-0149	5-9-77	5-10-71	280	3.5	116	161
3810	12-0034	4-29-77	5-5-77	333	177	70	86
3811	12-0151	5-6-77	5-6-77	227	114	51	62
3893	12-0090	5-20-77	5-23-77	151	139	8	4
3894	12-0082	5-18-77	5-20-77	15	11	2	2
3895	12-0167	5-18-77	5-18-77	239	119	60	60
3899	12-0051	5-23-77	5-23-77	108	39	36	33
3900	12-0133	4-27-77	4-29-77	437	32	178	227
4101	12-0188	12-23-75	12-24-75	1,000	264	349	389

C. R. Walker
C. R. Walker
Radiochemistry

C. P. Blackledge, Supervisor

- 2 -

August 29, 1977
GAT-552-77-141

-APPROVED:

H. S. Spring

H. S. Spring, Section Head
Radiochemistry

CRW:HSS:jmj

cc: B. J. Rumble
J. R. Griggs
... W. D. Netzer
J. C. Dikeman
W. T. Schweinsberg
R. I. Kaplan
D. L. Williams
C. F. Trivisonno
J. S. Murrell
A. J. Saraceno
B. J. Carlson
L. N. Rockvam ✓

INTERDEPARTMENTAL CORRESPONDENCE,

TO: C. P. Blackledge, Supervisor

DATE: September 23, 1977

DEPT: Industrial Hygiene

FROM DEPT: D-552

LOCATION: X-101 Building

CODE NO: GAT-552-77-152

REFERENCE:

SUBJECT: **TRANSURANICS** IN UF_6 PRODUCED AT X-705

Sample Transfer	Cylinder NO.	Production Dates		Total Np & Pu D/m/gU	Transuranics		
		From	To		^{237}Np D/m/gU	^{239}Pu D/m/gU	^{238}Pu D/m/gU
4102	12-0115	11-13-75	11-14-75	23,800	200	9,500	14,100
4103	12-0154	1-26-76	1-27-76	3,300	300	1,400	1,600
4104	12-0180	1-27-76	1-28-76	5,500	3,600	1,000	900

C. R. Walker

C. R. Walker
Radiochemistry

B. W. Short

B. W. Short
Radiochemistry

APPROVED:

H. S. Spring

H. S. Spring, Section Head
Radiochemistry

CRW:BWS:HSS: jmj

cc: B. J. Rumble

J. R. Griggs

W. D. Netzer

J. C. Dikeman

W. T. Schweinsberg

R. I. Kaplan

D. L. Williams

C. F. Trivisonno

J. S. Murrell

A. J. Saraceno

B. J. **Carlson**

L. N. Rockvam

INTERDEPARTMENTAL CORRESPONDENCE

TO: C. P. Blackledge, Supervisor

DATE: September 26, 1977

DEPT: Industrial Hygiene

FROM DEPT: D-552

LOCATION: X-101 Building

CODE NO: GAT-552-77-154

REFERENCE:

SUBJECT: ANALYSIS FOR **TRANSURANICS** IN RECOVERY **UF₆**
PRODUCED AT X-705

<u>Sample Transfer</u>	<u>Total Np & Pu Alpha D/m/gU</u>	<u>²³⁷Np D/m/gU</u>	<u>²³⁹⁻²⁴⁰Pu D/m/gU</u>	<u>²³⁸Pu D/m/gU</u>
4131	355	105	135	115
4132	212	38	88	86
4133	590	35	270	285

C R Walker

C. R. Walker
Radiochemistry

B. W. Short

B. W. Short
Radiochemistry

APPROVED:

H. S. Spring

H. S. Spring, Section Head
Radiochemistry

CRW:BWS:HSS:jmj

cc: B. J. Rumble
J. R. Griggs
W. D. Netzer
J. C. Dikeman
W. T. Schweinsberg
R. I. Kaplan
D. L. Williams
C. F. Trivisonno
J. S. Murrell
A. J. Saraceno
B. J. Carlson ✓
L. N. Rockvam

INTERDEPARTMENTAL CORRESPONDENCE

TO: C. P. Blackledge, Supervisor

DATE: November 11, 1977

DEPT: Industrial Hygiene

FROM DEPT: D-552

LOCATION: X-101 Building

CODE NO: GAT-552-77-178

REFERENCE:

SUBJECT: ANALYSIS OF RECOVERY UF₆ FOR TRANSURANICS

Sample Transfer	Np & Pu Alpha D/m/gU	Transuranics D/m/gU			
		<u>237Np</u>	<u>239 240Pu</u>	<u>238Pu</u>	
4344	1,275	1,050	1 1 0	115	
4761	388	27	167	194	
4762	4 4	12	18	14	
4763	10	3	4	3	
4138*	<5				

* This is a U₃O₈ sample.

T. A. Acox

T. A. Acox
Radiochemistry

APPROVED:

H. S. Spring

H. S. Spring, Section Head
Radiochemistry

TAA:jmj

cc: B. J. Rumble
J. R. Griggs
W. D. Netzer
J. C. **Dikeman**
W. T. Schweinsberg
S. W. Wohlfort
D. L. Williams
C. F. Trivisonno
- - J. S. Murrell
A. J. Saraceno
B. J. **Carlson**
L. N. **Rockvam** ✓

Christopher DOE 2-21-00

Item 4 - Continued

existing between the "H" Area floor and the east transite wall. The FY 1977 GPP project "UF₆ Containment Oxide Conversion" proposes to totally seal the Cold Trap Room. However, an interim effort to patch the void between the transite and "H" Area floor is not planned.

Item 5 - "...samples will be collected from streams between the major facility components."

Sample taps exist on the inlet and outlet streams of the magnesium fluoride and sodium fluoride traps. These would bracket the major components of the fluorination system. The need for additional gas sample points appears unnecessary.

Item 6 - "Unfluorinated oxide is normally 'blown back' to the feed periodically. Samples will be collected each time this recycle operation is conducted."

Perhaps the best method for obtaining a representative sample of the tower ash would be to sample after the grinding process. Normally, a small amount of ground ash remains in the bottom of the **ashpot** after grinding. Grinding would tend to homogenize the ash. Therefore, a more representative sample would be obtained after grinding than taking a dip sample of the full **ashpot** before grinding.

Item 8 - "Pre-job employee training will be provided to inform employees of the special problems encountered in working with transuranics and of the special need for carefully following established procedures in this experiment."

It is recommended that all Oxide Conversion operators be scheduled together for one week of training on day shift.

Item 10 - "Access to the area will be carefully controlled for the duration of the experiment."

The following lists the minimum personnel requiring access to Oxide Conversion:

Oxide Conversion Operators.....	9
Oxide Conversion Foreman.....	1
Shift Foremen.....	3
Chemical Operations Engineer.....	1
Refrigeration.....	2
Maintenance.....	3
Instrument Maintenance.....	2

WEEK 83 **Listed** Distribution
GAT-823-77-130

- 3 -

August 22, 1977
GAT-823-77-130

Electrician	1
Materials Handling	2
Health Physics	<u>2</u>
Total	26

L. N. Rockvum
✓ **L. N. Rockvum**
Chemical Operations

LNR:rgh

Distribution: D. D. Adkins
J. G. Crawford
W. J. **Lemmon**

INTERDEPARTMENTAL CORRESPONDENCE

TO: **Listed Distribution**

DATE: **September 12, 1977**

DEPT:

FROM DEPT: 071 - Planning

LOCATION:

CODE NO:

REFERENCE:

SUBJECT: - **TRANSURANIC TEST RUN**

On Tuesday, August 23, 1977, a meeting was held in the Federal Office Building at Oak Ridge, TN to acquaint ORO personnel with the plans to conduct a test run at the X-705 Oxide Conversion Facility. The test run would cover approximate?; one month of operation in which 2000 kg of uranium as oxide would be fed at the Oxide Conversion Facility. The 2000 kg of uranium would contain transuranics with a count of 2700 dpm per gram of uranium. This calculates to a total weight of about 40 ng of transuranics. Those in attendance were:

ERDA-ORO: **H. D. Fletcher**
R. V. Anderson
J. F. Wing
H. E. Clark
R. D. Smith

GAT: **G. D. Althouse**
R. L. O'Doherty
G. Crawford
V. S. Emler
F. S. Voss
A. H. Clary

V.S. Emler described the proposed test and discussed two major expected results:

1. **A good mass balance would be obtained from**
 - a. **ash product**
 - b. **magnesium fluoride traps**
 - c. **NaF traps**
 - d. **facility piping**
 - e. **product UF₆**
2. **Health aspects**
 - a. **isolation of areas where possible releases might occur**
 - b. **effect on personnel working during the test run**

He also reported that special consideration would be given to the employees working on the test run involving: (a) in-vivo counting; (b) special training and discussions; (c) special urinalysis procedures.

F.S. Voss reported on the difficulties of obtaining a good mass material balance. A portion of this difficulty could be related to the fact that PuF₆ tends to reduce to PuF₄ when it comes in contact with most anything, especially metals. When reduced to PuF₄, the compound becomes a solid and is not homogeneously dispersed throughout the container. This situation makes it almost impossible to obtain representative samples for Pu analysis. He also described the present sampling procedures which involve the analysis of material received from others.

APPROVED FOR RELEASE BY:

W. A. Christopher DOE 2-21-00

J.G. Crawford discussed the following physical aspects to be considered during the test run:

1. Confine transuranic materials in isolated areas
 - a. seal ventilation ducts to prevent- spread of possible contaminants
 - b. seal isolation areas *where* practical
2. Care of waste products
 - a. Careful collection of filter ash (very fine dust) to prevent airborne contamination: This could involve the use of plastic bags or a related method of containment.
 - b. containment and storage-of-filter ash
 - c. assure that transuranic material is not reintroduced into the recovery processes
 - d. storage and control of magnesium fluoride traps (this is not so much a problem as ash collection because of the physical characteristics of the trap materials)

H.D. Fletcher indicated that he would have no problem with maintenance type "tightening up" of the X-705 system which would possibly need to be done anyway, but he would want to be sure that Jerry Wing and Dick Smith were satisfied prior to the test performance. Should these refinements result in a one-to-two month delay of the test, it would create no problem for him

R.D. Smith indicated that he would like to see the following sequence of events:

1. wants GAT to run "normal stuff" to test tightness of the X-705 system after making the identified alterations in X-705 and prior to running the transuranic-contaminated materials
2. accomplish containment practices (plastic bags, type of bellows, to accomplish collection and cleaning practices)
3. afford good protection for operations personnel and also leave a clean area for future maintenance and other activities.

R. V. Anderson discussed some activities at National Lead. He indicated that National Lead had been authorized to investigate the possibility of effectively reducing transuranic content before sending their products to GAT. Material comes to National Lead as a liquid, and the transuranic count could possibly be reduced significantly prior to conversion to a solid. Laboratory tests indicate the "amine extraction process" can reduce transuranic counts to less than 100 dpm per gram uranium

September 12, 1977

Summary of the discussions and agreements could be listed as:

1. perform maintenance and related sealing of isolated areas
2. GAT will conduct trial runs with material not containing transuranics to determine possible contamination problems
3. after a successful trial run, the transuranic-contaminated materials would then be used in the proposed experiment.

A. H. Clary
A. H. Clary

AHC:wr

INTERDEPARTMENTAL CORRESPONDENCE

TO: W. J. Lemmon
J. G. Crawford
D. D. Adkins

DATE: October 5, 1977
FROM **DEPT:** 823
CODE-NO: GAT-823-77-148

SUBJECT: 'CURRENT PREPARATIONS IN VIEW OF NOVEMBER'S
TRANSURANIC MODEL RUN IN-OXIDE CONVERSION

In anticipation of November's experimental processing of transuranic-contaminated uranium oxide, preparations have been underway to "tighten **up**" Oxide Conversion. Efforts have been made to isolate the various rooms in order to minimize cross-contamination in the event of **a release**. Also,, the integrity of the system itself has been improved through increased preventative maintenance measures. Along these lines, the following items have been accomplished to date.

1. Ventilation duct work has been sealed in the Tower Room.
2. Various holes in the Tower Room have been plugged.
3. The vent from the Cold Trap Room to the High Bay Area has been sealed.
4. ' Loose glove parts have been repaired and gasketing checked on all glove boxes.
5. System valves have been inspected and repaired as needed.

In regard to further ventilation isolation of the various rooms, one item remains to be accomplished. An extensive **gap** exists between the "H" Area floor and the east transite wall. Efforts will be made to seal the void between the transite and "H" Area floor prior to November's run.

Chemical Operations is working closely with Health Physics **concerning the** upcoming transuranic-contaminated run. Herb Giorgio of the Health Physics Department is presently

APPROVED FOR RELEASE BY:

W. R. [Signature] DOE 2-21-00

Current Preparations in View
of November's Transuranic
Model Run in Oxide Conversion

-2-

October 5, 1977
GAT-823-77-148

assigned to Oxide Conversion. Herb will study "E" Area during its normal operation this month and make recommendations prior to November's experiment.

Attached **is** a preliminary **outline** of the type and number of samples proposed for the experimental run. ,

L N Rockvam

L. N. Rockvam
Chemical Operations

LNR:vr .

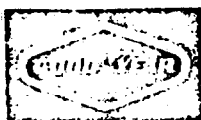
Attachment

PROCESS SAMPLING AND MONITORING

<u>Type of Sample</u>	<u>Number of Samples</u>
Tower Ash	30
Upstream and Downstream of MgF_2 Traps	60
Upstream and Downstream of NaF Traps	60
Filter Ash .	3
Hand Table Solution	1
MgF_2 Trapping Material	9
NaF Trapping Material	12
HEPA Filters"	20
UF_6	10
Feed Oxide	~100

AIR SAMPLING

<u>Type of Sampler.</u>	<u>Number of Sampler Locations</u>	<u>Number of Samples "Collected During Four Weeks</u>
Continuous Air Sampler	70	756
AIM Sampler/Recorder	9	7 5 6
Grab-Area Sampler	6	672
Personnel Sampler	S/Shift	420



GOODYEAR ATOMIC CORPORATION

P. O. BOX 628

PIKETON, OHIO 45661

PHONE: 614-289-2331

OCT 28 1977

GAT-823-77-154

U. S. Department of **Energy**

ATTN: Mr. H. D. Fletcher, Director

Uranium Enrichment Operations Division

Oak **Ridge** Operations

P.O. Box **E**

Oak Ridge, TN **37830**

Gentlemen:

PREPARATIONS FOR PROCESSING **TRANSURANIC** BEARING **MATERIAL**
AT X-705 OXIDE CONVERSION

Strict measures are taken in **conjunction** with the normal operation of the X-705 Oxide Conversion Facility to assure the containment of the uranium materials handled prior to, during, and following the conversion process. In preparation for the processing of transuranic bearing uranium materials at this facility in November, even more stringent measures are deemed necessary to assure containment and personnel protection. These measures include the physical **"tightening up"** of the facility systems and the application of stringent administrative controls.

The measures that have been taken to date to physically **"tighten up"** the system(s) include the following:

1. The ventilation ductwork has **been sealed in** the tower room.
2. Various holes in **the** tower room have been closed.
3. The vent from the cold trap room to the **high bay area** has been sealed.
4. The loose glove box parts have been repaired and **gasketing** has been checked on all glove boxes.

APPROVED FOR RELEASE BY:

H. F. Fletcher DOE 2-21-00

Mr. H. D. Fletcher

10-2-

OCT 26 1977

GAT-823-77-154

5. Sya **tem** valves have **been inspected** and **repaired as** needed.

In regard to further ventilation of the **various** rooms, one item remains to be accomplished. A gap exists between the "H" area floor and the east **transite** wall. Efforts **will** be made to seal this void prior to the November **run**.

The stringent administrative controls which **are** planned for the **November** run and are primarily associated with Instruction and **technique** follow.:

1. The first week of November, operating and maintenance personnel currently Involved with the X-705 Oxide Conversion Facility **will** be presented a-five-day **re-**training program. Operation of the facility will **commence** the second week of November. During **the** retraining sessions, emphasis will be placed on **critical** operations, the containment of the radioactive process materials, and the proper use of personal protective **equipment**. Instruction will be provided by **Chemical**. Operations supervisonal personnel and **representatives** of the Industrial Hygiene and Health Physics **Department**. One topic of discussion **will** concern transuranic materials and their properties.
2. **When** operation of the **facility** commences, access to the area will be strictly limited to **"Authorized Personnel Only"**.
3. Hot lines established for equipment maintenance will be stringently enforced.
4. **When** operations or maintenance is being carried out, supplied air respirators will be worn if there **is a possibility** of personnel being exposed to **radioactive** contamination (e.g., **removing** absorbent-trapping materials),
5. Efforts will be made to **carry out** as many exposure risk operations as possible within the containment glove boxes. The efforts **will** include carrying out operations **in** glove boxes that have previously Men performed out-**side**. Such operations include P.G. filter handling-and filter **ashpot** handling.
6. Strict measures will be **taken to** assure that **contaminated**

Mr. H. D. Fletcher

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6. Continued

equipment will be properly covered or wrapped immediately on removal from the system to **preclude** the spread of contamination. This equipment will remain covered until it **is decontaminated**.

7. The decontamination of equipment **will** be carried out only in **well** ventilated **areas** and personnel **performing** this operation will wear respiratory **protection** until the wet **decontamination commences**.

8. A **policy** will be enforced to handle open containers (i.e., both empty and full) in a careful manner. For **example, empty** containers **will be** placed in the disposal hamper rather than being thrown in.

9. The Oxide Conversion Facility **will be monitored** at an increased frequency by **the Health Physics Department** and the **facility will be promptly decontaminated** when **necessary**.

Very truly yours,

GOODYEAR ATOMIC CORPORATION

Original Signed By
W. R. Schultz

for
N. H. Hurt
General Manager

JPV:vr:rh *and for JBC.*

ML
bcc: G. D. Althouse
W. R. Schultz
C. A. Mentges
V. S. **Emler**
W. J. Lemon
J. G. Crawford

INTERDEPARTMENTAL CORRESPONDENCE

TO: Listed Distribution

DATE: November 3, 1977

DEPT:

FROM DEPT: 923

LOCATION:

CODE NO: GAT-923-77-321

REFERENCE:

SUBJECT: ANALYSIS OF SAMPLES COLLECTED DURING
EXPERIMENTAL OXIDE CONVERSION PROCESS

Commencing on November 7, Chemical Operations plans to process uranium oxide which is contaminated with transuranic elements. Approximately 100 samples will be submitted to Chemical Analysis daily for quantitative determinations of transuranic concentrations. Twenty percent of these samples will be collected from the process systems (UF₆, Oxide, solutions, ash, etc.). The remainder of the samples will be air samples collected on various types of filter paper. The data and information derived from the analyses of these samples will be used to:

- evaluate the validity of the exposure - release concentration models,
- complete a process system transuranic element mass balance,
- assess personnel exposures to radioactive materials during the experimental run,
- determine the effectiveness of existing administrative and engineering controls, and
- study the need for additional controls and procedures.

Manpower projections indicate that 60 man-months would be required to complete the analyses of the 2000 samples which would be submitted during the 20 days of the experiment. However, GAT is committed to reporting to DOE-ORO, by January 1, 1978, an experimental evaluation of the exposure-release concentration models and the results of the system transuranic elements mass balance. In order to comply with this reporting requirement, it is necessary to resolve the following questions so that Chemical Analysis will be able to establish the proper priorities for completing the analytical work within the specified time frame.

1. Type of samples submitted for analysis. (Refer to attached table.)
2. Number of samples of each type required to complete sufficient statistical representation of data.
3. Storage and transfer of samples.
4. Laboratory requirements for handling and submitting samples.

You and your representatives are invited to attend a meeting on Monday, November 7 in the Production Conference Room at 1:00 p.m. to discuss these problems.

Original signed by
C. P. Blackledge, Jr.

APPROVED FOR RELEASE BY:

CPB:hg

E n c .

C. P. Blackledge, Jr, Supervisor
Industrial Hygiene & Health Physics

Listed Distribution

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November 3 , 1977
GAT-923-77-321

Listed Distribution

V. S. Emler
H. R. Giorgio
J. R. Griggs
W. D. Netzer
c. F. Trivisonno
F. S. VOSS
J. P. Vournazos ✓

SAMPLES COLLECTED DURING **EXPERIMENTAL** OXIDE CONVERSION PROCESS

<u>Type of Sample</u>	<u>Collection Medium</u>	<u>Proposed -Collection Frequency</u>
✓ Air Sample (CAM)	Whatman 1141 <i>Filter</i>	27/day
• Air Sample (AIM)	IN-70 <i>Filter</i>	O/week
3 } Air Sample { <i>HIGH VOLUME</i>	Whatman #41 <i>Filter</i>	24/day
2 Air Sample (PER) <i>SONAL</i>	Millipore HA or AA	24/day
	Millipore HA or AA	19/day
Oxide		All containers
Tower Ash		6/day
UF ₆ {Tower - PG Filter)		3/day
UF ₆ (PG Filter - MgF ₂ Trap)		3/day
UF ₆ (MgF ₂ Trap - Cold Trap)		3/day
Gas (Cold Trap - NaF Trap)		3/day
Vent Gas		3/day
UF ₆ Product		All containers
Filter Ash		All containers
Hand Table Solutions		All containers
Decontamination Solutions		All containers
Wipe (Smear) Samples		10/day
Emergency Air Samples*	Whatman #41 <i>Filter</i>	

* Analysis required **immediately** following collection of sample.

CPB:hg
11/7/77

INTERDEPARTMENTAL CORRESPONDENCE

TO: **J. G. Crawford**
D-820
X-100 Building

DATE: November 14, 1977
FROM DEPT: 823

SUBJECT: COMMENTS ON **TRANSURANIC** MODEL RUN - OXIDE CONVERSION

This correspondence provides documentation of recent activities associated with the transuranic model run at X-705 Oxide Conversion,

In recent weeks, X-705 supervisory personnel have initiated procedures for the "tightening up" of the Oxide Conversion facility as to the containment of the process materials. This "tightening up" was in preparation for the conversion of transuranic bearing oxide materials. It was **assumed that the** basic integrity of the facility and the procedures associated with its operation were adequate with minimum modification to carry out a model run of transuranic bearing materials (i.e., a minute quantity of 40 mg total) without presenting a safety hazard. Plans for this model run had been made with the cooperation of the Health Physics Department and the assistance of this group' had been requested to carefully monitor operations associated with the run. The primary objective of the model run was to operate in a safe manner while identifying problem areas' that would be corrected prior to handling the transuranic materials on a long-term basis.

APPROVED FOR RELEASE BY:

W. E. Smith *NE 2-21-80*

Comments on Transuranic
Model Hun - Oxide Conversion

On November 4, 1977, Dick Smith of D.O.E. visited the X-705 Oxide Conversion facility **and inspected** the facility as to its readiness for processing transuranic bearing materials. Accompanying Mr. Smith on his Inspection tour were Charles **Blackledge**, Herb Giorgio, Dan Adkins and John Vournazos. The comments made by Mr. Smith during the **course of** the inspection indicated that he felt **additional measures** should be taken to assure the containment of the process materials prior to the transuranic run. His comments also indicated a different philosophy for preparing the facility for handling transuranics than had been presented previously. Mr. Smith's philosophy seemed **to** be that the assurance of 100% material containment should be attained (i.e. for safety) prior to the handling of transuranic materials at the Oxide Conversion facility. Concepts attributable to **Mr.** Smith that **were** the basis of the above conclusion follow:

1. It was recommended that Health Physics develop some means of assuring glove box integrity as to containment.

In conjunction with this, Mr. Smith inspected the Plexiglas panel installation and sealing material. In addition, the glove boxes were inspected for sources of potential leakage (e.g. holes and defective gloves). A hole of approximately **3/4"** diameter was found and seemed to cause significant concern.

2. Tools for maintenance are normally inserted into a **glove** box by temporarily removing a glove. Mr. Smith recommended an air lock be provided for this function.
3. It was emphasized repeatedly that what may have been adequate safety precautions **for uranium** was not adequate for transuranics.
4. The procedure for removing the **PG** filters was recently improved to provide better containment. Instructions related to this procedure were presented to all nine of the operating personnel of the Oxide Conversion facility. Three of the operators satisfactorily carried out the removal of **PG** filters at the end of the October run employing the new procedure. Mr. Smith strongly recommended that every operator assigned to this facility physically remove the **PG** filters, employing the new procedure, as a dry run before handling transuranic materials.
5. The procedure for emptying the filter **ashpots** was also improved to provide better containment. **The** improvements included carrying out this operation inside the glove box (i.e., it had previously been done outside the glove box). Mr. Smith recommended that this operation be carried out inside the glove box by operating personnel outside the box. In general, Mr. Smith did not want

personnel to enter the box under any condition. If personnel had to enter the glove box, then an air lock should be provided for containment in association with entry and exit.

6. It was suggested that all equipment, tools, and materials used in the conversion process should be retained in the Oxide Conversion area. This suggestion included the provision of a handtable in the area for equipment decontamination.
7. Mr. Smith suggested that it might be appropriate to operate the Oxide Conversion facility for two or three more runs on non-transuranic material before handling transuranics. In this manner, experience could be gained with the new procedures and precautions that have been planned in association with handling transuranics.

Mr. Smith had additional comments and suggestions (e.g. Health Physics surveillance around the clock and quicker sample analysis results) but X-705 personnel had already planned for or requested the same. In general, the X-705 personnel agree that all of Mr. Smith's recommendations are worthwhile but the significance placed on the system defects noted and the need to take the stringent precautions suggested prior to the

trial run are questionable. **In any** case, Mr. Smith seemed to think that there was a greater hazard involved in handling the minute quantity of transuranics in question than those representatives of the various groups who attended the meeting at Oak Ridge on this subject.

A meeting was called Monday, November 7 by C. Blackledge to discuss the analysis of samples pertaining to the anticipated **transuranic** run at Oxide Conversion. Present at the meeting were Blackledge, Giorgio, Voss, Walker, Trivisonno, Netzer, Adkins, and Vournazos. The samples planned for in association with the transuranic run are listed in the attached letter. Significant information **from this meeting** follows:

1. It would take 6 manhours to run each sample for transuranics.
2. It would take $6 + 6 = 12$ manhours to run each sample for solubles and nonsolubles.
3. Per Voss, "**Since** transuranics plate out on metal there is no known way to sample cylinders (i.e. to an accuracy within **200%**)."
4. Per Voss, "**If** the above is true, what is the necessity of sampling the **UF₆** stream where **there is** less material".
5. It appears a material balance cannot be obtained due to the inability to analyze.

6. It became apparent that even if the number of samples listed are decreased (e.g. **by 1/2**) special funding will be necessary for this activity and other normal sampling analyses would have to slide.

The number of samples requested in the attached letter were arrived at by Blackledge and Rockvam (i.e. not knowing the scope of such a request), The number of samples can be reduced but a significant number will still be necessary in order to predict where the material is in the system and to preclude any Health Physics problems.

On Thursday, November 10, a meeting was held in Blackledge's office. Blackledge, Giorgio, Adkins and Vournazos were in attendance. Significant information from this meeting follows:

1. Per Blackledge, "**Smith** was concerned about the decontamination of the facility and that he himself (Blackledge) had requested that the facility be decontaminated months ago". Blackledge made this statement Monday. Today Health Physics was requested to survey the area **immediately** and then henceforth on a routine basis. Blackledge agreed.

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J. G. Crawford
Comments on Transuranic
Model Bun - Oxide Conversion

-7-

November 14, 1977

2. Smith had called Blackledge and was upset about an anonymous phone call to Fletcher from someone in the Production Division at GAT.
3. A-letter will be sent from D.O.E. shortly listing their position on the run.
4. Smith will personally inspect the area again before the run.
5. Blackledge suggested we accommodate- Smith's suggestions where possible on minor things and cost bigger items; then, **let** D.O.E. decide what they want to do.
6. The attendees of this meeting **were** in agreement on the recommendations made by Mr. Smith. The **recommendations** are essentially those listed in the first part of this correspondence as being attributable to Mr. Smith.

J. P. Vournazos
Chemical Operations

JPV: **vr**

cc: W. J. Lemmon



Department of Energy
Oak Ridge Operations
P.O. Box E
Oak Ridge, Tennessee 37830

November 22, 1977

Goodyear Atomic Corporation
ATTN: Mr. N. H. Hurt
General Manager
P. O. Box 628
Piketon, Ohio 45661

Gentlemen:

**PREPARATIONS FOR PROCESSING TRANSURANIC BEARING MATERIAL AT X-705
OXIDE CONVERSION**

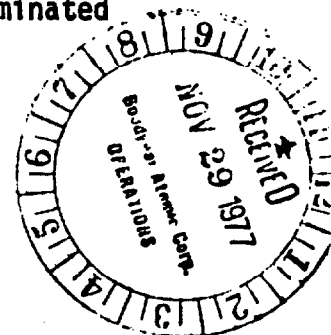
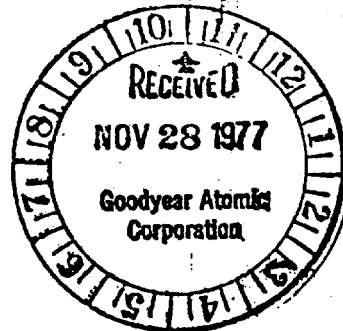
Please refer to your letter of October 28, 1977, on this same subject.

We have reviewed those measures, both physical and administrative, you have taken to assure containment and personnel protection during operations involving the proposed processing of the transuranic contaminated uranium oxide at X-705E in November. The measures you have taken to date in preparation for this November campaign are considered necessary; however, we are of the opinion that further actions should be taken by GAT before ORO approval is granted to process this material. This judgment is based on the limited review by Dick Smith, ORO, of both the facilities and procedures to be employed during the campaign in a brief walk-through of X-705E the week of October 31.

We feel the campaign would yield much better results if further preparatory measures are completed prior to processing the transuranic contaminated oxide. The attachment delineates further actions which should be initiated, reviewed, and/or completed by GAT as soon as possible. After the X-705E facility has been prepared and the appropriate approvals given by GAT staff groups, we will conduct a pre-operational review of the facility and procedures to be used during operation and maintenance. Approval by the ORO pre-operational review committee will be required before the transuranic contaminated material can be processed.

APPROVED FOR RELEASE BY:

W. H. Gustafson DE 2-21-10



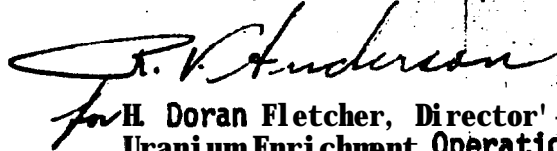
Mr. N. H. Hurt, GAT

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November 22, 1977

If you need any clarification pertaining to the attachment, please contact Dick Smith at FTS 850-4113.

Sincerely,



H. Doran Fletcher, Director'--
Uranium Enrichment Operations Division

OUO:RNC

Attachment:
As stated

cc: C. A. Keller

NOV 29

Required Actions for X-705E for Trans-U Operation

The basic philosophy used to process this transuranic contaminated material should be containment -- primary containment within the process equipment and secondary containment within the glove box. In order to operate within this philosophy the following actions (as a minimum) are required:

1. The existing procedure for removal of the sintered metal filters requires the removal of the lid and then a plastic sleeve being held by hand around the filter housing during filter removal. . . . This procedure should be modified to provide containment of the filter housing (probably in plastic) prior to the removal of the filter lid, with the containment not being breached until the lid is replaced. This, in effect, creates a temporary secondary containment system. Holding plastic around the housing by hand is unacceptable.
2. Existing procedures require a man to enter the glove box to empty ash pots. Efforts should be made to accomplish this task remotely, from outside the box. If efforts show this infeasible, then a temporary secondary containment barrier should be constructed at the personnel entry point. Health physics coverage should be provided to monitor personnel during this procedure. .
3. Entry and removal of equipment from the glove box should be accomplished using normal bag-in/bag-out procedures.
4. Cleaning of the sintered metal filters at the hand tables in the X-705 high bay should be thoroughly evaluated for health physics adequacy as well as the effect of introducing this trans-U contaminated material into the recovery system. The feasibility of establishing a temporary cleaning table in the tower room should be evaluated.
5. The training series for employees should include hands-on practice for all employees expected to operate and/or perform routine maintenance (filter changes, etc.).
6. All holes in the glove box should be sealed. Even though the box is under negative pressure and all leakage is expected to be inward, air currents can develop which, in fact, can produce some out leakage.
7. All gloves and O-rings should be replaced. Gloves should be secured with two O-rings.

8. The tower room and all equipment therein should be decontaminated to the lowest level practicable. This will promote leak detection capabilities necessary to identify needed future modifications.
9. Limits for contamination and airborne-activity should be evaluated and specified considering the postulated risk. - That is, should trans-U limits be imposed on uranium or a combination thereof? Similarly, personnel contamination criteria should be established, as well as decontamination criteria for equipment. Procedures for compliance with these established limits should be established as necessary.

These few changes do not require any major facility modifications and are not necessarily all inclusive. They are intended to promote the containment philosophy expressed above. Based upon the evaluation of the facility's operation, additional changes or modifications may be warranted.,